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Cardiovascular health in China: Low level vs high diversity

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Commentary

Cardiovascular health in China: Low level vs high diversity

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Cardiovascular diseases (CVDs) are the leading causes of mortalities worldwide and in China the prevalence rate has increased by 14•7% from 1990 to 2016, accounting for >40% of all moratlity [1]. Significant regional diversities in CVDs burdens have also been identified across China, including the urban-rural gradients and sex-related differences [2]. As well, there is a growing gap between different provinces, attributed to the imbalances of socioeconomic development and suboptimal ecology of medical care in China [3].

The concept of ideal cardiovascular health (CVH) was proposed by the American Heart Association in 2010, consisting of seven components that are highly correlated to cardiovascular risk factors. This facilitates screening of individuals at high risks and population-specific prevention methods [4]. Although studies have investigated the spatial patterns of CVH among different populations in China, there is no investigation that explores the geographic diversity of CVH at the provincial level in a nationally representative survey [5,6].

In *The Lancet Regional Health – Western Pacific*, Zhang and colleagues reported the prevalence of CVH among adults and described the geographic patterns in mainland China [7]. This study was conducted in 298 counties/districts randomly selected from 31 administrative regions (provinces, municipalities and autonomous areas), with a sample of 74,726 adults (mean age 44•4 ± 15.9 years, and 49•3% were women) without clinical history of CVDs. The nationally representative survey determined, in general, only 1•06% (95% confidence interval [CI]: 0•88–1•24%) of the overall population had ideal CVH in China. Out of the seven metrics of CVH, ideal fasting glucose (88•0%) was the most common component, followed by ideal physical activity (79•6%), ideal cholesterol (72•3%), ideal smoking (71•1%), ideal BMI (64•0%), ideal blood pressure (32•3%), and ideal diet (7•1%). A significant spatial variance was identified at provincial levels, ranging from 0•02% (95% CI: 0–0•05%) in Tibet Autonomous Region to 2•76% (95% CI: 0•45–5•07%) in Heilongjiang Province. The CVH levels were of substantial variation between urban and rural residents, closely correlated to local socio-economic development measured by Socio-demographic Index (SDI). With regard to ideal diet, the prevalence was higher in the Eastern and Southern China, and lower in the Northwest, which was also associated with low SDI. For sex difference, women had higher level of CVH than men. All considered, these findings raise several important issues.

Firstly, although Zhang and colleagues included a large sample and adjusted for a variety of potential confounders, the heterogeneity of the ethnicity remains to be addressed. China is a multicultural country that has arisen from 56 ethnicities, with a diverse population of over 1•4 billion people and an imbalanced economic development. Each ethnic group practices its unique culture, language, dietary, lifestyle and marriage patterns, and its genome-diversity plays a role in the genetic-environment interaction on CVH. The outcome of this study was mainly descriptive but it identified several undesirable features, such as inequalities in access to health care and varying health and nutritional status across regions of different socioeconomic status and between the different ethnic groups resident in urban and rural areas. These warrant further in-depth discussion [3]. In addition, hospital commercialization and deficiencies in the supply of medical care have driven up its cost, thus further decreasing access to medical care [8]. Such genetic/ethnicity/community/healthcare ecology issues should be addressed on top of the geographical mapping of CVH in China.

Secondly, following the establishment of the concept of ideal CVH, several studies have shown that the CVH score is also a useful cardiovascular health metric in Chinese populations [5,6]. However, the concept of the ideal CVH highlights the importance of "primordial prevention" which is not the equivalent of "primary prevention". In primordial prevention, efforts aim at preventing adverse levels of the risk factors preceding the occurrence of the suboptimal/preclinical phase of CVD, rather than only clinical event prevention among individuals at risk [6]. Therefore, a longitudinal study, like a suboptimal health cohort study, is urgently needed

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to reveal the temporal sequence and cause-effect relationships between CVH metrics and CVDs from the perspectives of preventive, predictive, personalized /precision medicine [9,10].

Thirdly, although the "prevalence" from cross-sectional surveys provides the base-line data for policy making, it is the "incidence" from longitudinal investigations that give the key intervention guidance for CVH promotion and CVD prevention [9]. The analytical capacity for integrating cross-sectional and longitudinal types of data from local and national surveys, facility-based routine reporting and national disease surveillance programs needs to be strengthened to ensure the quality, reliability and validity of the data [3,8]. The traditional top-down process for policy formulation needs to become increasingly evidence-based, driven by the commitment of decision makers to make use of available national survey data, such as the information from this national CVH investigation in China [7].

In terms of global and regional health, the article by Zhang and colleagues indicates that the burden of CVD hangs heavily in China, and warrants similar research across many other low and middle income countries, especially in Western Pacific region.

Declaration of Competing Interest

I declare I have no competing interests.

References

[1] Liu S, Li Y, Zeng X, et al. Burden of cardiovascular diseases in China, 1990–2016: findings from the 2016 global burden of disease study. JAMA Cardiol 2019;4(4):342–52.
[2] Zhao D, Liu J, Wang M, Zhang X, Zhou M. Epidemiology of cardiovascular disease in China: current features and implications. Nat Rev Cardiol 2019;16(4):203–12.
[3] Shao S, Zhao F, Wang J, et al. The ecology of medical care in Beijing. PLoS One 2013;8(12):e82446.
[4] Lloyd-Jones DM, Hong Y, Labarthe D, et al. Defining and setting national goals for cardiovascular health promotion and disease reduction. Circulation 2010;121(4):586–613.
[5] Wang Y, Liu X, Qiu J, et al. Association between ideal cardiovascular health metrics and suboptimal health status in Chinese population. Sci Rep 2017;7(1):14975.
[6] Yan N, Zhou Y, Wang YX, et al. Association of ideal cardiovascular health and Brachial-Ankle pulsewave velocity: a cross-sectional study in Northern China. J Stroke Cerebrovasc 2015:1025 doi.org/10.1016/j.jstrokecerebrovasdis.2015.08.031.
[7] Zhang M, Shi Y, Shi O, et al. Geographical variations in cardiovascular health in China: a nationwide population-based survey of 74,726 adults. The Lancet Regional Health – Western Pacific 2020. doi:10.1016/j.lanwpc.2020.100033.
[8] Ling RE, Liu F, Lu XQ, et al. Emerging issues in public health: a perspective on China's healthcare system. Public Health 2011;125:9–14.
[9] Wang Y, Ge S, Yan Y, et al. China suboptimal health cohort study: rationale, design and baseline characteristics. J Transl Med 2016;14(1):1–12.
[10] Kupaev V, Borisov O, Marutina E, et al. Integration of suboptimal health status and endothelial dysfunction as a new aspect for risk evaluation of cardiovascular disease. EPMA J 2016;7(1):19. doi:10.1186/s13167-016-0068-0.